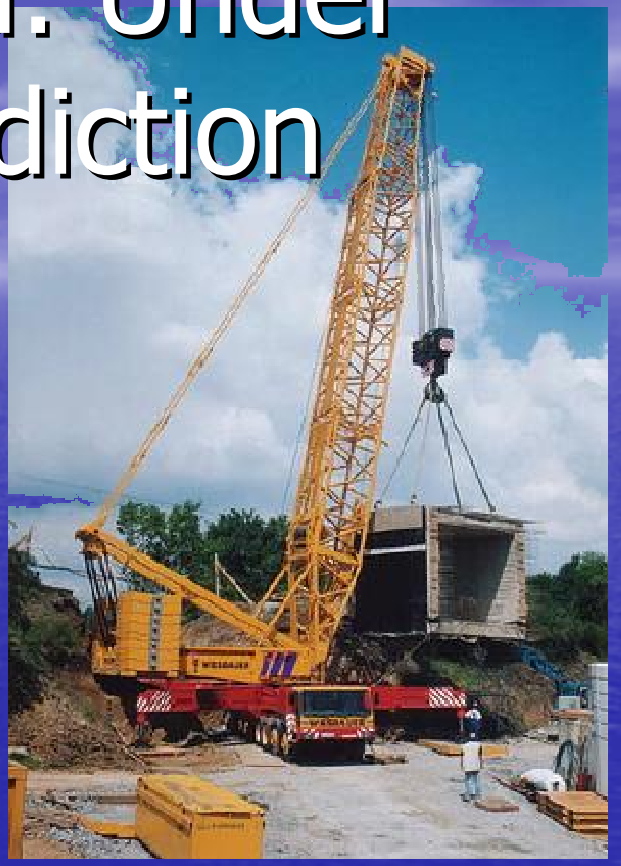
Introducing Trucking by Water: California's Maritime I-5 Seaway

How US ships built in US shipyards can support clean air and less truck congestion without taxpayer subsidy

Presentation to The Southern California Association of Governments
by The Santa Maria Group

Mare Island Shipyard: Under California State Jurisdiction

Santa Maria Steel LLC



A lattice boom construction crane will lift ship units into the drydock for erection

A parcel of land with drydocks at the Mare Island Navy Shipyard can be economically converted to a modern US ship assembly plant

The Ship

Santa Maria Shipping LLC

Existing design Conofeeder of 150 forty foot container capacity means that within a 24 hour round trip = 150 X 2 trips = 300 containerized truckloads per day

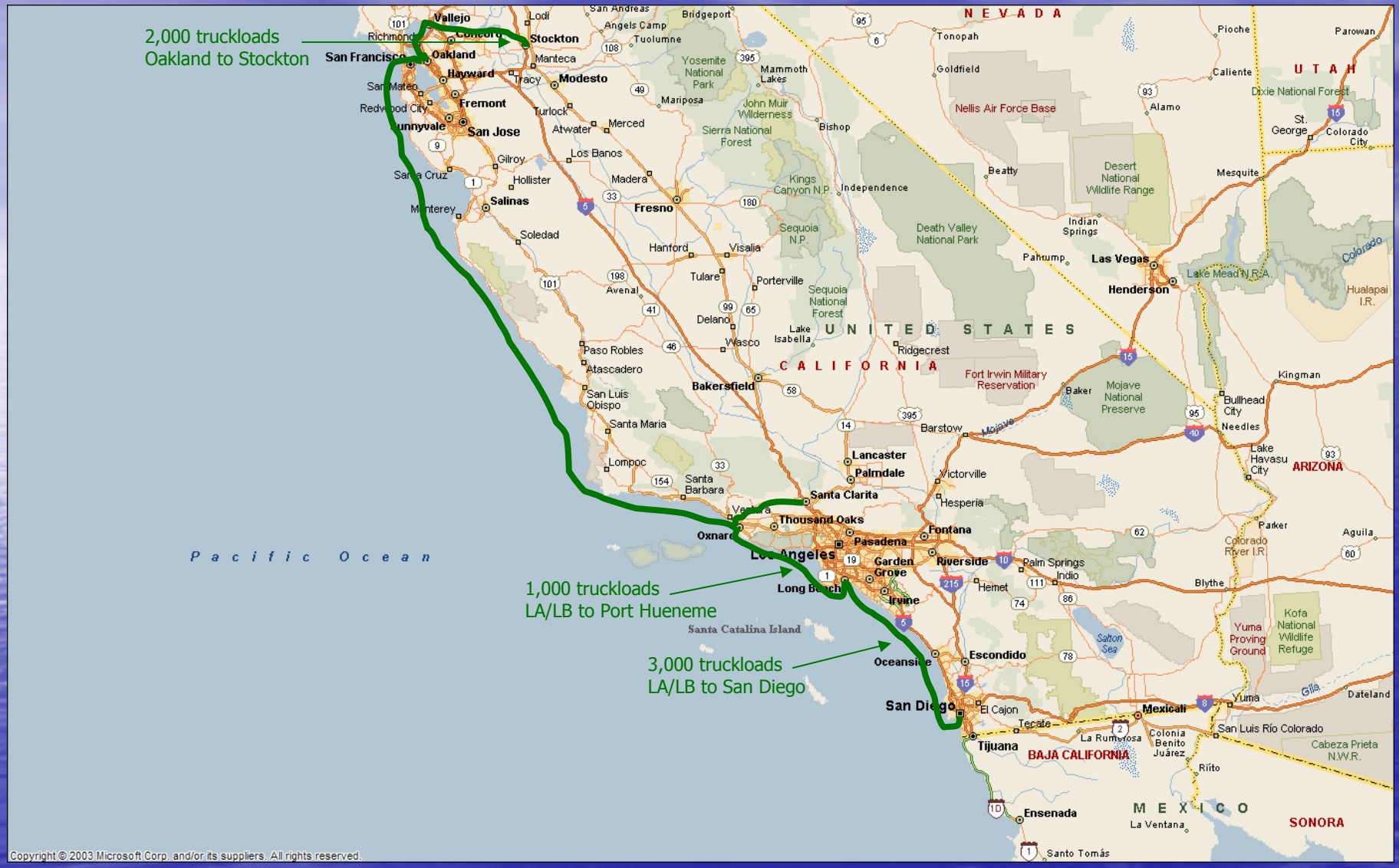
The Ship (open-top alternate)

Santa Maria Shipping LLC

Four vessels of this design were delivered from German shipyard Meyer Werft and are on a regular North Atlantic service – the containers are secured by container guides rising above the main deck level

Existing design Open-top Containership of 800 forty foot container capacity. At 20 knots a 24 hour round trip = 800 X 2 trips = 1600 containerized truckloads per day

California's new I-5 seaway: 6,000 containerized truckloads by water per day



1 Ship = 400 daily truckloads X 20 Ships = 8,000 truckloads / day

1 ship = $20 million X 20 ships = $400 million

Transit Times

- Containers leaving LA/LB Ports are delayed between 3 and 5 days by port congestion
- Feeder containerships loaded directly from the Hub Ports have little delay
- Transit times are cut by 2 days or more
- Fuel consumption is 50% less per container via ship versus truck saving shippers money and cutting down on air pollution
- Future electric powered engines could reduce ship energy consumption and pollution further
- Reduces road and rail expenditures
- Delivery time: 9 months per vessel
- Vessel services can be financed without taxpayer subsidy
- Improved rail and terminal handling needed at main and satellite ports

Fuel Options

Current commercial vessels have a number of fuel and propulsion options

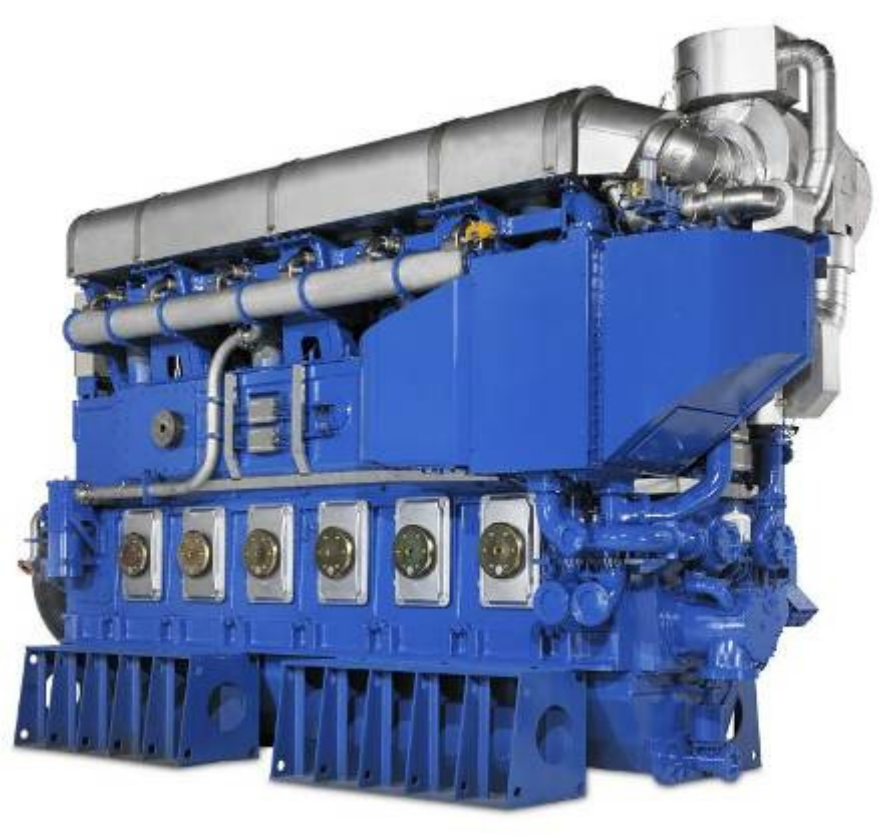
- Diesel electric drives having multiple generators utilizing direct, azimuth or cycloid type propulsion systems reduce fuel consumption by always working at high efficiency

Fuel options include

- Ultra Low Sulfur Diesel Fuel with <5 ppm sulfur
- Low Sulfur Diesel Fuel with <15 ppm sulfur
- Electric Power
- Liquefied Natural Gas used in a Compressed Natural Gas format
- Dual Fuel Engines combining

  Low Pressure Natural Gas and Low/Ultra Low Sulfur Diesel Fuel

Duel Fuel Examples



Wärtsilä 6L50DF

- High efficiency
- Low gas pressure
- Low emissions, due to:
  - High efficiency
  - Clean fuel
  - Lean burn combustion
- Fuel flexibility
  - Gas mode
  - Diesel mode
- Two engine models
  - Wärtsilä 32DF
  - Wärtsilä 50DF